

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) A low resistivity silicon electrode adapted to be mounted in a plasma reaction chamber including a confinement ring which is used in semiconductor substrate processing, comprising:

 a silicon electrode comprising a showerhead electrode having a plurality of gas outlets arranged to distribute process gas in the plasma reaction chamber during use of the showerhead electrode, the electrode having a thickness of about 0.3 0.25 inch to 0.5 inch and an electrical resistivity of less than 1 about 0.005 to 0.1 ohm-cm, the electrode having an RF driven or electrically grounded surface on one side thereof, the surface being exposed to plasma in the plasma reaction chamber during use of the electrode; and

~~a graphite backing ring elastomer bonded to the electrode.~~

2. (Canceled)

3. (Previously Presented) The electrode of Claim 1, wherein the gas outlets have diameters of 0.020 to 0.030 inch and the gas outlets are distributed across the exposed surface.

4. (Original) The electrode of Claim 1, wherein the electrode comprises single crystal silicon or silicon carbide having heavy metal contamination of less than 10 parts per million.

5. (Original) The electrode of Claim 1, wherein the electrode comprises an electrically grounded upper electrode of a parallel plate plasma reactor.

6. (Currently Amended) The electrode of Claim 1, wherein the electrical resistivity of the electrode is less than 0.1 0.025 ohm-cm.

7. (Original) The electrode of Claim 1, wherein the electrical resistivity of the electrode is less than 0.05 ohm-cm.

8. (Currently Amended) A plasma etch reactor having comprising an electrode assembly which includes the electrode of Claim 1, the electrode comprising:

a graphite backing ring elastomer bonded to the electrode; and
thin beads of an electrically conductive elastomeric material between the electrode and the graphite backing ring, the elastomeric material including an electrically conductive filler which provides an electrical current path between the electrode and the graphite backing ring.

9. (Original) A plasma etch reactor having an electrode assembly which includes the electrode of Claim 1, the electrode being resiliently clamped to a support member by a clamping member.

10. (Previously Presented) A plasma reaction chamber including the showerhead electrode of Claim 1, the showerhead electrode being bonded or clamped to a temperature-controlled member in an interior of the plasma reaction chamber, the temperature-controlled member including a gas passage supplying a process gas to the showerhead electrode, the temperature-controlled member including a cavity and at least one baffle plate located in the cavity, the gas passage supplying process gas so as to pass through the baffle plate prior to passing through the showerhead electrode.

11-20. (Canceled)

21. (Currently Amended) A low resistivity silicon electrode adapted to be mounted in a plasma reaction chamber including a confinement ring which is used in semiconductor substrate processing, comprising:

a silicon electrode comprising a showerhead electrode having a plurality of gas outlets arranged to distribute process gas in the plasma reaction chamber during use of the showerhead electrode, the gas outlets having a diameter of about 0.025 inch to 0.030 inch, the electrode having a thickness of about 0.3 0.25 inch to 0.5 inch and an electrical resistivity of less than 4 about 0.1 ohm-cm, the electrode having an

RF driven or electrically grounded surface on one side thereof, the surface being exposed to plasma in the plasma reaction chamber during use of the electrode; and a backing ring elastomer bonded to the electrode.

22. (Canceled)

23. (Canceled)

24. (Canceled)

25. (Currently Amended) The electrode of Claim 21, wherein the backing plate ring is of aluminum, aluminum alloy, silicon carbide or graphite.

26. (Canceled)

27. (Previously Presented) The electrode of Claim 1, wherein the gas outlets comprise ultrasonically drilled holes.

28. (Canceled)

29. (Canceled)

30. (Currently Amended) A low resistivity silicon electrode adapted to be mounted in a plasma reaction chamber including a confinement ring which is used in semiconductor substrate processing, comprising:

a silicon electrode comprising a showerhead electrode having a plurality of gas outlets arranged to distribute process gas in the plasma reaction chamber during use of the showerhead electrode, the electrode having a thickness of about 0.375 inch to 0.5 inch and an electrical resistivity of less than 4 about 0.1 ohm-cm, the electrode having an RF driven or electrically grounded surface on one side thereof, the surface being exposed to plasma in the plasma reaction chamber during use of the electrode; and

a graphite backing ring elastomer bonded to the electrode.

31. (Previously Presented) The electrode of Claim 21, wherein the backing ring is elastomer bonded to the electrode by thin beads of an electrically conductive elastomeric material between the backing ring and electrode, the elastomeric material including an electrically conductive filler.

32. (Cancelled)

33. (Previously Presented) The electrode of Claim 30, wherein the gas outlets have diameters of 0.020 to 0.030 inch and the gas outlets are distributed across the exposed surface.

34. (Previously Presented) The electrode of Claim 3, wherein the gas outlets have a diameter of about 0.025 inch to about 0.028 inch.

35. (Previously Presented) The electrode of Claim 21, wherein the gas outlets have a diameter of about 0.025 inch to about 0.028 inch.

36. (Previously Presented) The electrode of Claim 33, wherein the gas outlets have a diameter of about 0.025 inch to about 0.028 inch.

37. (New) The electrode of Claim 21, wherein the electrode has an electrical resistivity of 0.005 to 0.02 ohm-cm.

38. (New) The electrode of Claim 30, wherein the electrode has an electrical resistivity of 0.005 to 0.02 ohm-cm.

39. (New) A plasma etch reactor comprising an electrode assembly including the electrode of Claim 1 and a confinement ring.

40. (New) A plasma etch reactor comprising an electrode assembly including the electrode of Claim 21 and a confinement ring.

41. (New) A plasma etch reactor comprising an electrode assembly including the electrode of Claim 30 and a confinement ring.